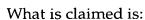
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- An optical communication system comprising a first number M of fixed wavelength lasers coupled to a second number N of external modulators
 (N less than M) through a photonic cross-connect switch, wherein the photonic cross-connect switch is capable of routing the optical carriers of any N of the M fixed wavelength lasers to the N external modulators while maintaining the polarity of the Noptical carriers routed to the N external modulators, and wherein the N external modulators are coupled to N data
 signals for producing N optical data streams from the N optical carriers and the N data signals.
 - 2. The optical communication system of claim 1, wherein each of the N data signals is fed to a different one of the N external modulators.
 - 3. The optical communication system of claim 1, wherein the outputs of the fixed wavelength lasers comprises optical carriers at distinct wavelengths.
 - 4. The optical communication system of claim 1, wherein the photonic cross-connect switch comprises:

at least M optical inputs coupled to the outputs of the M fixed wavelength lasers;

at least N optical outputs coupled to the inputs of the N external modulators; and

- a photonic cross-connect fabric coupled to the at least M optical inputs and to the at least N optical outputs via polarization maintaining fiber for routing the optical carriers of any N of the M fixed wavelength lasers to the N external modulators.
- 5. The optical communication system of claim 4, wherein the photonic cross-connect fabric comprises a Micro Electro Mechanical System (MEMS).

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- 6. The optical communication system of claim 4, wherein the photonic cross-connect fabric comprises a Micro Opto Electro Mechanical System (MOEMS).
- 7. The optical communication system of claim 4, wherein the photonic cross-connect fabric comprises a bubble (champagne) optical switching system.
- 8. The optical communication system of claim 4, wherein the photonic cross-connect fabric comprises a lithium niobate optical switching system.
- 9. The optical communication system of claim 4, wherein the photonic cross-connect fabric comprises a liquid crystal optical switching system.

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- 10. A photonic cross-connect device comprising at least M optical inputs coupled to at least N optical outputs (N less than M) through a photonic cross-connect fabric that is coupled to the at least M optical inputs and to the at least N optical outputs via polarization maintaining fiber and is capable of routing optical signals received over any N of M optical inputs to the N optical outputs.
- 11. The photonic cross-connect device of claim 10, wherein the at least M optical inputs are couplable to at least M fixed wavelength lasers, and wherein the optical signals are optical carriers at distinct wavelengths.
- 12. The photonic cross-connect device of claim 10, wherein the photonic cross-connect fabric comprises a Micro Electro Mechanical System (MEMS).
- 13. The photonic cross-connect device of claim 10, wherein the photonic cross-connect fabric comprises a Micro Opto Electro Mechanical System (MOEMS).
- The photonic cross-connect device of claim 10, wherein the photonic
 cross-connect fabric comprises a bubble (champagne) optical switching
 system.
 - 15. The photonic cross-connect device of claim 10, wherein the photonic cross-connect fabric comprises a lithium niobate optical switching system.
 - 16. The photonic cross-connect device of claim 10, wherein the photonic cross-connect fabric comprises a liquid crystal optical switching system.

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17. A method for producing optical data streams in an optical communication system, the method comprising:

maintaining a first number M fixed wavelength lasers, each fixed wavelength laser having an output of a different wavelength that the other fixed wavelength lasers;

maintaining a second number N external modulators, wherein the second number N is less than the first number M;

routing optical carriers from each of a predetermined N of the M fixed wavelength lasers to a different one of the N external modulators while maintaining the polarity of the optical carriers; and

feeding a data signal to each of the N external modulators to produce N optical data streams at N specific wavelengths.

18. The method of claim 17, wherein routing the output of each of a predetermined N of the M fixed wavelength lasers to a different one of the N external modulators comprises:

feeding the outputs of the M fixed wavelength lasers into a photonic cross-connect device that is capable of routing the optical carriers of the any N of the M fixed wavelength lasers to the N external modulators; and

configuring the photonic cross-connect device to route the predetermined N of the M fixed wavelength lasers to a different one of the N external modulators.

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